

# SONY®

## White paper

March 2013



Xperia™ Tablet Z  
SGP311/SGP312

# Purpose of this document

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Sony product White papers are intended to give an overview of a product and provide details in relevant areas of technology.

## Document history

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| Version       |                         |           |
|---------------|-------------------------|-----------|
| February 2013 | First released version  | Version 1 |
| March 2013    | Second released version | Version 2 |

## Sony Mobile Developer World

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For the latest technical documentation and development tools, go to [www.sonymobile.com/developer](http://www.sonymobile.com/developer).

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# Table of contents

|   |          |
|---|----------|
| <b>Product overview .....</b>                                     | <b>2</b> |
| Xperia™ Tablet Z Wi-Fi – The precision engineered HD tablet ..... | 2        |
| Signature features .....  | 3        |
| Facts – dimensions, weight, performance and networks .....        | 4        |
| Categorised feature list .....                                    | 6        |
| <b>Technologies in detail .....</b>                               | <b>8</b> |
| Device-to-device communications (local) .....                     | 8        |
| Bluetooth™ wireless technology .....                              | 8        |
| Wi-Fi® .....  | 9        |
| DLNA Certified® (Digital Living Network Alliance) .....           | 10       |
| Messaging .....   | 11       |
| MMS (Multimedia Messaging Service).....                           | 11       |
| Email .....   | 11       |
| Positioning – location based services .....                       | 12       |
| Provisioning (OMA CP) .....                                       | 12       |
| Multimedia (audio, image and video) .....                         | 13       |
| Synchronisation (OMA DS, EAS, Google Sync™) .....                 | 14       |
| Web browser .....   | 14       |
| Memory in Device .....  | 15       |
| Trademarks and acknowledgements .....                             | 19       |

# Product overview

## Xperia™ Tablet Z Wi-Fi – The precision engineered HD tablet

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How tablets should have been from the beginning.

### **So brilliantly vivid, you feel like you're there**

Think about the sharpest, most vivid TV picture. Now imagine it on a tablet. Xperia™ Tablet Z delivers the kind of immersive viewing you'd normally only get with an HDTV. Created by the people behind BRAVIA® TVs, Xperia™ Tablet Z brings Sony's expertise to an Android™ tablet. The brilliant 10.1" Reality Display™ is powered by Mobile BRAVIA® Engine 2, which enhances the clarity and richness of every image. This HD tablet boasts the fullest colour display, too. For bluer blues, greener greens and seriously killer sunsets. With Xperia™ Tablet Z you meet a world so vivid, everything else pales in comparison.

### **Minimal yet distinctive – OmniBalance design**

The design of Xperia™ Tablet Z is focused on creating balance and symmetry in all directions. We call it OmniBalance design. OmniBalance™ design balances technology vs. design, letting you get so totally immersed in the content that the hardware disappears.

Xperia™ Tablet Z has subtly rounded edges and smooth, reflective surfaces on all sides, which are held together by an innovative skeleton frame. The glass-paneled front has a seamless surface and enhanced reflective coating.

### **Lightning speed performance – Quad core processor**

We've matched the latest Sony software with the powerful Qualcomm® Snapdragon™ S4 Pro processor. This advanced 1.5 Ghz quad core processor gives you maximum performance and speed, and incredible graphics, without draining your battery. Run multiple apps simultaneously, surf the web with no loading time, and stream videos without a break. The Snapdragon S4 Pro processor is asynchronous, which means each core is powered up and down independently. So you get the precise amount of power when you need it, without wasting power when you don't.

### **One-touch connectivity from Sony**

Sharing with friends and connecting your world has never been easier. Based on NFC (near field communication), our One-touch functions connect one device to another in a single tap. No wires, cables, or fiddling with settings necessary.

- One-touch sharing: Share photos, music and more between your tablet and smartphone or NFC-enabled laptop.
- One-touch listening: Play the music on your tablet or smartphone through a wireless speaker.

## Signature features

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The Sony Xperia™ Tablet Z comes with a range of features as standard. Below is a summary of the key signature features.

### **Xperia™ Local connectivity**

#### **More control over your media**

Using Local connectivity, you can exercise more control over how media files get transferred and stored.

### **Xperia™ Home screen application**

#### **The place you call Home**

Customise your Home screen with widgets, shortcuts, folders, themes, wallpaper and other items.

Where's best for you? Email top right? Music player bottom left? You decide. With six extensions to your Home screen, you've got plenty of space to put things where you want. Just remember to flick left or right to find them.

### **Xperia™ Socialife™\***

Use the Socialife application from Sony to get your favorite news, videos and social networking feeds in one place. The Socialife home screen gives a clear overview of friends' Facebook™ and Twitter™ activity, plus news feeds that you have subscribed to. It colour-codes and sizes articles for easy reading, adding photos and cropping images of your friends' faces to illustrate each story.

*\* This service is not available in all markets.*

## Facts – dimensions, weight, performance and networks

---

|                          |   |
|--------------------------|---|
| <b>Operating system</b>  | Google™ Android™ 4.1 (Jelly Bean)                           |
| <b>Processor</b>         | 1.5 GHz Qualcomm APQ8064+MDM9215M Quad Core                 |
| <b>GPU</b>               | Adreno 320  |
| <b>Size</b>              | 172x266x6.9 mm  |
| <b>Weight</b>            | 495 grams   |
| <b>Available colours</b> | Black<br>White  |
| <b>Main screen</b>       |   |
| Colours                  | 16,777,216 colour TFT                                       |
| Resolution               | 1920x1200 pixels  |
| Size (diagonal)          | 10.1 inches   |
| Scratch-resistant        | Shatter-proof sheet on scratch-resistant glass              |
| <b>Input mechanisms</b>  |   |
| Text input               | On-screen QWERTY keyboard                                   |
| Touch screen             | Capacitive  |
| Touch gesture            | Yes – multi-touch, up to 10 fingers supported               |
| <b>Memory</b>            |   |
| RAM                      | 2 GB  |
| Flash memory             | Up to 16/32 GB*   |
| Expansion slot           | microSD™ card, up to 64 GB                                  |
| SDXC                     | Up to 64 GB   |
| <b>Camera</b>            |   |
| Camera resolution        | 8.1 MP  |
| Digital zoom             | 16x   |
| Video recording          | Yes – HD 1080p  |
| Front Camera             | Yes – HD 1080p for video chat and 2.2 MP for camera capture |
| <b>Sensors</b>           |   |
| Accelerometer            | Yes   |
| Ambient light sensor**   | Yes   |
| Magnetometer             | Yes   |

|                                  |                          |
|----------------------------------|--------------------------|
| Gyroscope                        | Yes                      |
| <b>Networks</b>                  |                          |
| SGP311 (16 GB)<br>SGP312 (32 GB) | None                     |
| <b>Standby time</b>              | Up to 890 hours***       |
| <b>Music listening time</b>      | Up to 110 hours***       |
| <b>Video playback time</b>       | Up to 9 hours 50 mins*** |
| <b>Battery (Embedded)</b>        | 6000 mAh minimum         |

\* Memory comprises of approximate 2.0 GB firmware, and 11.6/26.1 GB “Internal storage” for music, pictures and movies, and some application data. For more details of memory, See “Memory in Device” on page 15.







\*\* There is no API for the light sensor.

\*\*\* Values are according to GSM Association Battery Life Measurement Technique as performed in controlled laboratory conditions. Actual time may vary.




**NOTE:** Battery performance may vary depending on network conditions and configurations, and device usage.

**NOTE:** Performance metrics measured under laboratory conditions.

## Categorised feature list

|  |  |  |
|--|--|--|
|  <p><b>Camera</b><br/>       8.1 megapixel camera<br/>       16x digital zoom<br/>       Auto focus<br/>       Continue Burst Mode<br/>       HDR for both picture/movie<br/>       Face detection<br/>       Front-facing camera (2.2 MP 1080p)<br/>       Geotagging<br/>       HD video recording (1080p)<br/>       Image stabiliser<br/>       Object tracking<br/>       Picture Effect<br/>       Quick launch<br/>       Scene recognition<br/>       Self-timer<br/>       Smile Shutter™<br/>       Sony Exmor RS®<br/>       for mobile Image sensor<br/>       Superior Auto<br/>       Sweep Panorama<br/>       Touch capture<br/>       Touch focus<br/>       White balance</p> |  <p><b>Music</b><br/>       3D Surround Sound (VPT)<br/>       Album art<br/>       Bluetooth™ stereo (A2DP)<br/>       ClearAudio+<br/>       Clear bass<br/>       Clear Phase™<br/>       Clear stereo<br/>       Dynamic normalizer<br/>       PlayNow™ service*<br/>       SensMe™<br/>       S-Force Front Surround 3D<br/>       TrackID™ music recognition*<br/>       “WALKMAN” application<br/>       xLoud™ Experience</p> |  <p><b>Internet</b><br/>       Bookmarks<br/>       Google Chrome™<br/>       Google Play™<br/>       Google™ search*<br/>       Google Voice™ Search*<br/>       Google Maps™ for Mobile with Street view and Latitude™*<br/>       Google Wallet™<br/>       NeoReader™ barcode scanner*<br/>       Pan &amp; zoom<br/>       Web browser (WebKit™)*</p>  |
|  <p><b>Communication</b><br/>       Facebook™ application*<br/>       Twitter™ application*</p>   |  <p><b>Messaging</b><br/>       Conversations<br/>       Email<br/>       Google Mail™*<br/>       Instant messaging<br/>       Multimedia messaging (MMS)<br/>       Predictive text input<br/>       Sound recorder<br/>       Text messaging (SMS)</p>   |  <p><b>Design</b><br/>       Auto rotation<br/>       Direct touch<br/>       Face Unlock<br/>       Gesture input<br/>       IPX5/7 (Water-resistant)<br/>       IP5X (Dust-proof)<br/>       On-screen QWERTY keyboard<br/>       Sony Mobile BRAVIA® Engine 2<br/>       Screenshot capturing<br/>       Touch screen<br/>       Throw<br/>       Voice input<br/>       Wallpaper<br/>       Wide color gamut</p> |



|  |   |   |
|--|---|---|
|  <p><b>Entertainment</b></p> <ul style="list-style-type: none"> <li>3D games</li> <li>Media browser</li> <li>Motion gaming</li> <li>PlayStation® Certified</li> <li>Radio (FM radio with RDS)</li> <li>SensMe™ slideshow</li> <li>Sony Entertainment Network*</li> <li>TV launcher</li> <li>Video streaming</li> <li>YouTube™*</li> </ul> |  <p><b>Organiser</b></p> <ul style="list-style-type: none"> <li>Airplane mode</li> <li>Alarm clock</li> <li>Battery STAMINA mode</li> <li>Calculator</li> <li>Calendar</li> <li>Contacts</li> <li>eCompass™</li> <li>Notes</li> <li>Setup guide</li> <li>Stopwatch</li> <li>Timer</li> </ul> |  <p><b>Connectivity</b></p> <ul style="list-style-type: none"> <li>3.5 mm audio jack (CTIA)</li> <li>aGPS*</li> <li>Bluetooth™ 4.0 wireless technology</li> <li>DLNA Certified®</li> <li>GLONASS*</li> <li>HDCP</li> <li>HDMI via MHL support</li> <li>Media Go™</li> <li>Media Transfer Protocol support</li> <li>Micro USB support</li> <li>Native USB tethering</li> <li>PC Companion</li> <li>Remote control application</li> <li>Screen mirroring**</li> <li>Synchronisation via Microsoft® Exchange ActiveSync®</li> <li>Synchronisation via Facebook™</li> <li>Synchronisation via Google™</li> <li>TV Side view</li> <li>USB charging</li> <li>USB High speed 2.0 support</li> <li>Wi-Fi®</li> <li>Wi-Fi® Hotspot functionality</li> <li>Xperia Link™</li> </ul> |
|--|---|---|

\* This service is not available in all markets.

\*\* The video quality may be degraded due to environmental interference.

# Technologies in detail

**NOTE:** The information outlined below is general and levels of compliance to standards and specifications may vary between products and markets. For more information, contact Sony Mobile Developer World or your Sony contact person where applicable.

## Device-to-device communications (local)

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### Bluetooth™ wireless technology

|  |   |
|--|---|
| Bluetooth™ profiles supported            | Advanced Audio Distribution Profile v1.2<br>Audio/Video Remote Control Profile v1.0<br>Handsfree Profile v1.6 (Wide band speech)<br>Headset Profile v1.1<br>Object Push Profile v1.1<br>Phonebook Access Profile v1.0<br>Message Access Profile<br>Host Interface Device Profile<br>Health Device Profile 1.1<br>Generic Attribute Profile Client/Server over LE<br>Proximity Monitor Profile over LE |
| Core version and supported core features | Version 4.0   |
| Connectable devices                      | Products supporting at least one of the profiles above.<br>BT4.0 accessories generally require installation of a supporting application.  |

More information:

[www.sonymobile.com/developer](http://www.sonymobile.com/developer)

[www.bluetooth.com](http://www.bluetooth.com)

**Wi-Fi®**

|                     |   |
|---------------------|---|
| Supported standards | IEEE 802.11a/b/g/n and Wi-Fi®<br>Wi-Fi Direct™, Wi-Fi Protected Setup   |
| Connectable devices | Wi-Fi® access points<br>Wi-Fi Direct compatible devices   |
| Frequency band      | 2.4 GHz/5 GHz   |
| Data transfer rate  | Up to 150 Mbit/s  |
| Security            | WEP Open Authentication<br>WEP Shared Authentication<br>WPA Personal and WPA2 Personal<br>WPA Enterprise and WPA2 Enterprise<br>EAP-TLS<br>EAP-TTLS/MSCHAPv2<br>PEAPv0/EAP-MSCHAPv2<br>PEAPv1/EAP-GTC |
| Encryption          | WEP 64 bit, WEP 128 bit, TKIP and CCMP (AES)  |
| Power save          | WMM-PS, IEEE-PS   |
| QoS                 | WMM   |

**DLNA Certified® (Digital Living Network Alliance)**

|                          |   |
|--------------------------|---|
| Supported Device Classes | <p><b>M-DMS – Mobile Digital Media Server</b><br/>Media Types: images, music and video<br/>Summary: The digital media server exposes the media files in your device to a Wi-Fi® network. The files can then be accessed from other DLNA Certified® clients.</p> <p><b>+PU+</b><br/>Media Types: image, video and music<br/>Summary: Play media in the tablet on another device, such as a TV or computer using 2 box push technology. +PU+ is integrated in the Album, Movies and Walkman applications.</p> <p><b>M-DMP – Mobile Digital Media Player</b><br/>Media Types: image, video and music<br/>Summary: Play content stored on another device, for example, a server or a PC, directly on the tablet.</p> <p><b>+DN+</b><br/>Media Types: video and music<br/>Summary: Download content stored on another device, for example, a server or a PC, and play the downloaded content directly on the tablet.</p> |
| Supported Bearers        | <p>Wi-Fi®<br/>Wi-Fi Direct</p>  |
| DRM Support              | The DLNA Certified® implementation does not support DRM-protected content.  |

## Messaging

---

### MMS (Multimedia Messaging Service)

According to OMA Multimedia Messaging Service v1.0 + SMIL

### Email

|                  |   |
|------------------|---|
| Bearer type (IP) | GPRS, EGPRS, UMTS   |
| Character sets   | BIG5 Traditional Chinese<br>GB18030<br>ISO-2022-JP Japanese<br>ISO-8859-1<br>ISO-8859-2 Eastern Europe<br>ISO-8859-5 Cyrillic<br>ISO-8859-7 Greek<br>ISO-8859-9 Turkish<br>ISO 8859-11<br>KOI8-R Cyrillic<br>Shift_JIS Japanese<br>USASCII<br>UTF-16<br>UTF-8<br>Windows® 874<br>Windows® 1251 Cyrillic<br>Windows® 1252<br>Windows® 1254 Turkish<br>Windows® 1258 Vietnamese |
| Protocols        | POP3 and IMAP4  |
| Push email       | Microsoft® Exchange ActiveSync® (EAS)   |
| Secure email     | SSL/TLS, both port methods (POPS/IMAPS) and START-TLS   |
| HTML mail        | Yes (read only)   |

#### More information:

[www.sonymobile.com/developer](http://www.sonymobile.com/developer)

[www.openmobilealliance.org](http://www.openmobilealliance.org)

## Positioning – location based services

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Supported standards:

- Qualcomm® GPSOneXtra™

Supported satellite systems:

- GPS
- GLONASS\*

\* **NOTE:** GPS and GLONASS are used together to calculate the position. Positioning is more robust and accurate in most conditions, if both systems are active. In conditions where the GLONASS receiver will not add any improvement it is automatically disabled to save power. The benefits of using GLONASS are automatically available for all applications using the Satellite Positioning API ("GPS Provider" in Android terminology).

## Provisioning (OMA CP)

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OMA CP version 1.1

## Multimedia (audio, image and video)

|                        |   |  |
|------------------------|---|--|
| <b>Audio Playback</b>  | <b>Decoder format</b>   | <b>Supported in file format</b>                                    |
|                        | MP3   | MP3 (.mp3), AVI (.avi, .xvid)                                      |
|                        | AAC LC, HE-AAC v1, HE-AAC v2, AAC ELD   | 3GPP (.3gp), MP4 (.mp4), MKV (.mkv), MPEG-TS (.ts)                 |
|                        | AMR-NB, AMR-WB  | 3GPP (.3gp)  |
|                        | General MIDI (GM)   | SMF (.mid)   |
|                        | Linear PCM, PCM/WAVE 8-bit and 16-bit   | WAV (.wav), AVI (.avi), MKV (.mkv)                                 |
|                        | Ogg vorbis  | Ogg vorbis (.ogg)  |
|                        | FLAC  | FLAC (.flac)   |
| <b>Audio Recording</b> | <b>Encoder format</b>   | <b>Supported in file format</b>                                    |
|                        | AMR-NB, AMR-WB  | 3GPP (.3gp), MP4 (.mp4), AMR (.amr)                                |
|                        | AAC-LC  | 3GPP (.3gp), MP4 (.mp4)  |
| <b>Image Playback</b>  | <b>Decoder format</b>   | <b>Supported in file format</b>                                    |
|                        | 1, 4, 8, 16, 24 and 32 bpp and RLE encoded formats                            | BMP (.bmp)   |
|                        | Single and multi-frame, bitmap mask support (GIF87a format and GIF89a format) | GIF (.gif)   |
|                        | JPEG  | JPEG (.jpg)  |
|                        | PNG   | PNG (.png)   |
| <b>Image Capture</b>   | <b>Encoder format</b>   | <b>Supported in file format</b>                                    |
|                        | JPEG  | JPEG (.jpg)  |
| <b>Video Playback</b>  | <b>Decoder format</b>   | <b>Supported in file format</b>                                    |
|                        | MPEG-4 1080p (1920x1080) Advanced Simple Profile Level 5 20 Mbps at 30 fps    | 3GPP (.3gp), MP4 (.mp4), Matroska (.mkv), AVI (.avi, .xvid)        |
|                        | H.264 1080p (1920x1080) High Profile Level 4 20 Mbps at 30 fps                | 3GPP (.3gp), MP4 (.mp4) Matroska (.mkv), MPEG2-TS (.ts, AAC audio) |
|                        | H.263 Profile 0 Level 70  | 3GPP (.3gp), MPEG-4 (.mp4)   |
|                        | VP8   | WebM (.webm), Matroska (.mkv)                                      |

|                              |   |                                 |
|------------------------------|---|---------------------------------|
| <b>Video Recording</b>       | <b>Encoder format</b>   | <b>Supported in file format</b> |
|                              | Video: H.263 Profile 0, H.264 1080p (1920x1080) High Profile<br>Audio: AAC-LC stereo, AMR-NB    | 3GPP (.3gp), MP4 (.mp4)         |
| <b>Audio/Video Streaming</b> | Streaming transport   | RTSP, HTTP / HTTPS, HLS         |
| <b>DRM</b>                   | DRM (Digital Rights Management) – features the rights and copy protection of downloaded content | OMA DRM 1.0 Marlin DRM          |

## Synchronisation (OMA DS, EAS, Google Sync™)

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OMA Data Synchronisation protocol versions 1.1.2 and 1.2

OMA Data Formats: vCard 2.1, vCalendar 1.0

Microsoft® Exchange ActiveSync® protocol version 2.5

Microsoft® Exchange ActiveSync® protocol version 12

Microsoft® Exchange ActiveSync® protocol version 12.1

Microsoft® Exchange ActiveSync® protocol version 14

Microsoft® Exchange ActiveSync® protocol version 14.1

Google Sync™

Related information:

[www.sonymobile.com/developer](http://www.sonymobile.com/developer)

## Web browser

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Google™ Chrome for Android™ is pre-installed.\*

Related information:

<https://play.google.com/store/apps/details?id=com.android.chrome>

\* Google™ Chrome is not available for all markets.



## Memory in Device

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To use Android devices efficiently, users should be aware of the different types of memory. This knowledge is important in order to understand, for example, where music, photos and videos are saved; how many apps can be downloaded from Google Play™; and how photos can be copied to a PC.

The below information is also of interest to developers who wants to make their programs able to make the best possible use of the resources in the device.

Generally, all Android devices share the same basic memory setup. What differs is how much memory is available to you via the different types of memory, and whether your device uses an external SD card or an internal memory chip. Any information specific to the particular device model described in this White Paper is noted as such.

### Types of memory

The types of memory described below are consistent with the terminology used in Sony mobile device menus and in other content relating to 2013 Xperia™ devices:

1. **Dynamic Memory** (also known as RAM) is used by applications that run when the device is turned on. The amount of Dynamic Memory influences how many applications and operating system services can run at the same time. In Android™, the operating system automatically closes applications and services that are not being used.

However, such automatic functionality has limits. For example, if a lower amount of free RAM is available to applications after a new release of the operating system (due to increased capabilities in the system), device speed will eventually be impacted (this is the main reason that a certain device cannot be indefinitely upgraded to newer releases of Android™).

If you experience problems with RAM, for example, if the device runs slower than usual or if the Home application restarts frequently when you leave an application, you should minimize the use of apps that run all the time. Such apps could include, for example, applications that frequently download social service updates. You could also consider using a static wallpaper instead of a live wallpaper.

To see which apps and services are currently active, go to **Settings > Applications > Running Services**. You should have at least 50 MB, and ideally 100 MB or more, of free RAM to avoid slowdowns and application restarts.

You should also be aware that if you update the device to a later Android release, the load on the built-in Dynamic Memory will increase due to the addition of more features, as mentioned above. As a result, the device may run slower after an update.

2. **System Memory** (also known as “System partition” or “/system”) is used for the Android OS and for most applications that are pre-loaded from the factory. This type of memory is normally locked, and can only be changed through a firmware upgrade. There is usually some free space available in this section of memory. However, since it is locked, you cannot save apps, photos or any other content to this memory. System Memory is reserved for future firmware upgrades, which almost always need more memory than the original firmware. You cannot see or influence the use of this memory.
3. **Internal Storage** is memory used as “working” memory. It can be compared to the C: drive on a PC or to the startup disk on a Mac.

This memory is used to store all application downloaded from Google Play Store™ (and other sources) and their settings and data (such as emails, messages, calendar events and the like). All applications have an allocated area which no other applications can access and where the application data can be

stored.

Some games also store content such as game music and level information outside their own designated area; and generally, any application can choose to save their data in locations of their own choosing (outside the protected application settings areas). Generally, such content is not deleted when an application is uninstalled but must be removed manually, by connecting the device to a computer with a USB cable, or by the use of a file manager application.

Internal Storage is also used for all user content added, for example, as a result of the user taking photos with the camera, downloading media files, and performing file transfers. Typical user content includes:

- photos
- movies
- music
- downloaded documents (as email attachments, for example)

Internal Storage will tend to fill up as a result of normal usage: use of applications saving their data, downloading and installing new applications, downloading free or bought content and taking pictures and movies. Therefore, the larger this memory is from the start, the more applications you can download and use, and the more pictures and movies you can take.

If the Internal Storage starts to get full, the device slows down, and in some cases it might no longer be possible to install more apps. You should always ensure that you have at least 100 MB of free device Memory. If not, you should consider removing some apps that you seldom use, or move content you do not frequently access to safe storage.

You can see how much Internal Storage is free in **Settings > Storage > Internal Storage**. You can also view more detail about how much memory is used by applications in **Settings > Applications > Manage Applications**.

Please note that in Sony Mobile 2013 products, “Internal Storage” is now the union of what was previously known as “device Memory” (for applications and their data. “/data”) and “Internal Storage” (for user’s content, “/sdcard”). The reason for this change is to make the use of available memory more flexible, and also to enable the optional encryption of user’s content.

### Memory card slot

In some products you may find both a large internal memory and a memory card reader slot. However, on the current Android platform, the card reader slot does not work in the same manner in a device with large internal memory, as in a device with ONLY a memory card slot.

Generally, since most applications expect only a single location of storage, such applications will not generally allow you to SAVE anything to the card (i.e. they will lack an option to choose storage location); however, some applications (for instance, the Sony Mobile “Camera” application) may actually allow you to do so. Other, for example backup applications such as the Sony Mobile “Memory” application, will by definition be configured to copy content from the Internal Storage to the external SD card.

On the other hand, when it comes to READING from an external SD Card, you will be able access content (videos, photos, music) on a memory card inserted in this slot without any special considerations since the Android system searches all available memory for content. Therefore, such products may be regarded as supporting a fourth type of memory, called “External Card”.

4. **SD Card** (known as “/ext\_card” from a programmer’s point of view, or by other names in other Android products) is the name for the removable SD memory card in all 2013 Sony Mobile products. As described above, this External Card memory is generally more limited in that any application can READ from it, but many applications cannot SAVE to this card. Only a few applications, including back-up applications and file manger applications, has the capability to save to this card.

#### **Backing up data to different memory types**

Generally, you should not save photos, videos and other personal content solely on the internal memory of a device. If something should happen with the hardware, or if the device is lost or stolen, the data stored on the device’s internal memory is gone forever.

In a device where an SD card reader is the main memory, it is relatively easy to take the card out and copy all content to a PC or Mac, or to an entertainment device with a memory card slot. In a product featuring Internal Storage as the main memory, it is not possible to physically remove the memory. Instead, any critical or high-value content must either be copied to an external SD card by a special backup application, transferred to remote storage over a network (mobile or Wi-Fi), or to a computer via a USB cable.

To facilitate the transfer of data via a cable, the Xperia™ Tablet Z supports the Microsoft standard, Media Transfer Protocol (MTP), which makes it possible to easily transfer content back and forth between your device and a Windows PC. For Apple Mac computers, a special application, BridgeforMac, is available offering built-in support for MTP; this application can be downloaded from the Xperia™ Tablet Z Support page.

Note that you do not need to back up or make a copy of applications that you have downloaded from Google Play™. They can normally be downloaded again if, once you have set up your Google account to work in a new device (or a device where the memory has been completely erased).

#### **Note 1:**

As noted above, some Android devices, including Sony Mobile devices from 2012, and Sony Ericsson devices from 2011 and earlier, do not use a single “Internal Storage” for both applications (and their data) and user content. Instead, these devices use either an external SD card for user content, or a corresponding area of internal memory to reproduce the functionality of an SD card. In such devices, there is a fixed limit between the application area (“/data”) and the user content area (“/sdcard”); with the result that user content can be filled, stopping the taking of new pictures for example, while there is still considerable free space in the application area; or vice versa, stopping the download and installation of new applications even though there is free memory in the content area.

#### **Note 2:**

Some devices with an integrated storage have abandoned the distinction between the application area and the content area when it comes to Factory Data Reset. As a result, there is no choice to do Factory Data Reset and preserve content; in such devices, all content is mandatorily and completely deleted from the device when a reset is performed.

In contrast, Sony Mobile has done the integration in a manner which makes it possible to preserve user content in this situation; therefore, when performing a Factory Data Reset, the default will still be to only remove applications and their data, and an option box must be checked if also all content is to be removed (as might be desirable when selling the device second-hand, for instance).

#### **Note 3:**

For a developer, it is important to note that from a programmer’s point of view, the location names used to refer to the different memory areas described in Note 1 are still valid; i.e., the area used for application (/data) is still present, as is the area used for content (/sdcard).

In reality, “sdcard” is a so-called symbolic link to “/data/media”, but from inside an Android application, “/sdcard” can still be used (for instance, use “sdcard/DCIM/100Android” to find all camera images). Continuing to use /sdcard to access the content area ensures compatibility across different products and Android releases in this regard.

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